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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,132	12/01/2003	Mitsuhiro Inazumi	117660	1227

25944 7590 08/01/2006

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EXAMINER

PRENDERGAST, ROBERTA D

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 08/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,132

Applicant(s)

INAZUMI, MITSUHIRO

Examiner

Roberta Prendergast

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1,3,4,6,7,9,10,12,13,15,16,18,19,21,22,24,25,27,28,30,31,33,34 and 36 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1,3,4,6,7,9,10,12,13,15,16,18,19,21,22,24,25,27,28,30,31,33,34 and 36 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Art Unit Designation has changed from 2671 to 2628

Allowable Subject Matter

The indicated allowability of claims 1, 4, 7, 10,12-24, 25, 28, 31, and 34 is withdrawn in view of the newly discovered reference(s) to Taubman et al., "JPEG2000 Image Compression Fundamentals, Standards and Practice", Kluwer Academic Publishers, November 2001, pages 1-4 and 611-613.

Upon further search and consideration it has been determined that claims 1, 4, 7, 10,12-24, 25, 28, 31, and 34 can be rejected under Bright U.S. Patent No. 6897977 in view of Taubman et al.

Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31 and 34 and paragraphs [0017], [0020], [0023], [0026], [0030], [0033], [0036], [0039], [0044], [0047], [0050],

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[0053], [0062], [0108], [0110], [0141], and Fig. 5 (element s1), the limitation of wherein the number of pixels contained in one side of the square area generated in the dividing the input image being 2 raised to the N-th power + 1 (where N is a natural number) is unclear because it could mean either 2^N+1 or 2^{N+1} . Since the specification discloses at paragraph [0134] that the value of L is 3, where $N=1$, Examiner will assume that applicant intends for the number of pixels contained in one side of the square area generated in the dividing the input image being 2 raised to the N-th power + 1 (where N is a natural number) is defined as 2^N+1 . Amending the claims and the paragraphs listed above to clearly define the number of pixels contained in one side of the square area generated in the dividing the input image being 2 raised to the N-th power + 1 (where N is a natural number) by placing parenthesis in the proper place, i.e. (2 raised to the N-th power) + 1 and amending Fig. 5 (element s1) to read "... (L: 2^N+1 ..." or "... (L: (2 raised to the N-th power) + 1..." will be sufficient to overcome this rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18, 19, 21, 22, 24, 25, 27, 28, 30, 31, 33, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bright U.S. Patent No. 6897977 in view of Taubman et al., "JPEG2000 Image Compression Fundamentals, Standards and Practice", Kluwer Academic Publishers, November 2001, pages 1-4 and 611-613.

Referring to independent claims 1, 7, 13 and 19, Bright teaches a method and device (see Fig. 7 and columns 11-12, lines 63-34 for a system capable of performing the method as described in claims 1 and 7) for dividing an image to be processed into one or more square areas, dividing each square area into triangular areas, and coding the divided triangular area (Fig. 1A (elements 10, 14 and 16)) comprising a step for inputting the image to be processed and storing the image (column 3, lines 7-10), a step of dividing the input image into one or more square areas (Fig. 1A(element 10); column 3, lines 13-14), recurrently dividing each divided square area into triangular areas (Fig. 1A(element 16); column 3, lines 16-17), a step of coding the divided triangular areas (Fig. 1B(element 86), i.e. "code data"; column 3, lines 38-58) and a step for outputting the generated coded data (column 9, lines 31-45) but does not specifically

teach wherein the number of pixels contained in one side of the square area generated in the dividing the input image being 2 raised to the N-th power + 1 (where N is a natural number).

Taubman et al. teaches this limitation (Chapter 15.6.3 SINGLE SAMPLE OVERLAP TRANSFORMS, OVERLAPPING TILES, pages 611-612, 1st-3rd paragraphs).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method and device of Bright to include the teachings of Taubman et al. thereby allowing the first and last samples of each row and column of every overlapping tile-component to have even indices thus substantially reducing quantization errors at the tile boundaries so that signification block artifact reduction is achieved (page 612, last paragraph).

Regarding claims 3, 9, 15 and 21, the rationale for claims 1, 7, 13 and 19 are incorporated herein, Bright, as modified above, teaches the method and device of claims 1, 7, 13 and 19 further including a storage device (column 12, lines 22-34) and a step for storing the type of shape of the triangular area (column 3, lines 2-6), a step of storing the pixel information of the vertexes and the hypotenuse midpoint of the triangular area (Fig.2 (elements 6 and 7); column 6, lines 44-54, column 7, lines 2-5), obtaining the pixel information of the hypotenuse midpoint of the triangular area (column 6, lines 37-47, i.e., starting at block 26 of Fig.1A, the pixel information of the hypotenuse midpoint, now is a new vertex of the newly created triangle, is obtained at block 28),

updating the type of shape of the triangular area, pixel information of the vertexes and the hypotenuse midpoint of the triangular area (columns 6-7, lines 55-7).

Regarding claims 25, 27, 31 and 33, claims 25, 27, 31 and 33 are similar to claims 1, 3, 7 and 9, respectively, Bright further teaches a computer-readable medium encoded with a computer program product for performing the method as now claimed in claims 1, 3, 7 and 9 (columns 11-12, lines 67-8).

Regarding independent claims 4, 10, 16 and 22, Bright teaches a method and device (see Fig. 7 and columns 11-12, lines 63-34 for a system capable of performing the method as described in claims 4 and 10) for dividing each square area of an image which is divided into one or more square areas into triangular areas, and decoding the divided triangular area (Figs.1A (elements 10, 14 and 16) and 6) comprising a step for inputting the coded image data (Fig. 6 (element 112)), a step for analyzing the input coded data (Fig. 6 (elements 114-122); column 11, lines 2-18), a step for recurrently combining triangular areas on the basis of the coded data and outputting the image data (column 11, lines 45-50, i.e., placing triangular areas together). It should be noticed that Bright fails to implicitly teach a step for combining a square area on the basis of combining triangular areas and reconstructing the image data from the combined square areas. However, Bright uses a decompressing technique comprising reversing the steps used in creating the compressed image data as discussed in above (column 11, lines 2-4). Furthermore, Bright teaches combining all the triangular areas (column 11, lines 45-4) but does not specifically teach wherein the number of pixels contained in

one side of the square area generated in the dividing the input image being 2 raised to the N-th power + 1 (where N is a natural number).

Taubman et al. teaches this limitation (Chapter 15.6.3 SINGLE SAMPLE OVERLAP TRANSFORMS, OVERLAPPING TILES, pages 611-612, 1st-3rd paragraphs).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to recognize that by rearranging the small right triangular areas, in the reversing step of dividing as shown in Fig.2, Bright would have included a step for combining a square area on the basis of the combined triangular areas as now claimed and it would have further been obvious to one of ordinary skill in the art at the time the invention was made to modify the method and device of Bright to include the teachings of Taubman et al. thereby allowing the first and last samples of each row and column of every overlapping tile-component to have even indices thus substantially reducing quantization errors at the tile boundaries so that signification block artifact reduction is achieved (page 612, last paragraph).

Regarding claims 6, 12, 18 and 24, the rationale for claims 4, 10, 16 and 22 are incorporated herein, Bright, as modified above, teaches the method and device of claims 4, 10, 16 and 22 further including a storage device (column 12, lines 22-34) and a step for storing the type of shape of the triangular area (column 3, lines 2-6), a step of storing the pixel information of the vertexes and the hypotenuse midpoint of the triangular area (column 3, lines 38-50), obtaining the pixel information of the hypotenuse midpoint of the triangular area (column 6, lines 37-47, i.e., starting at block 26 of Fig.1A,

the pixel information of the hypotenuse midpoint, now is a new vertex of the newly created triangular, is obtained at block 28), updating the type of shape of the triangular area, pixel information of the vertexes and the hypotenuse midpoint of the triangular area (columns 6-7, lines 55-7).

Regarding claims 28, 30, 34 and 36, claims 28, 30, 34 and 36 are similar to claims 4, 6, 10 and 12, respectively, Bright further teaches a computer-readable medium encoded with a computer program product for performing the method as now claimed in claims 4, 6, 10 and 12 (columns 11-12, lines 67-8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited with respect to tile size and single sample overlap.

Henry et al. U.S. Patent No. 6741666

Henry et al. U.S. Patent No. 6801666

The following non-patent literature is cited with respect to wherein the number of pixels contained in one side of the square area generated in the dividing the input image being 2 raised to the N-th power + 1 (where N is a natural number).

Movva, S. and Srinivasan, S., "A novel architecture for lifting-based discrete wavelet transform for JPEG2000 standard suitable for VLSI implementation",

Proceedings of 16th International Conference on VLSI Design, 4-8 Jan. 2003, pages 202-207.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberta Prendergast whose telephone number is (571) 272-7647. The examiner can normally be reached on M-F 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RP 7/19/2006


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER